

# TRENDS OF ANTIMICROBIAL CONSUMPTION IN HOSPITAL CARE IN RUSSIA IN 2001-2006



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Abstract #593

## Trends of antimicrobial consumption in hospital care in Russia in 2001-2006

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### Background

Hospitals are considered to play the key role in development and spread of antimicrobial (AM) resistance. Long-term surveillance of hospital consumption (HC) of AM is essential to improve prescribing practice and prevent excessive expenditures.

### Objectives

To assess main trends of HC of AM in Russia in 2001-2006.

### Methods

Data containing generic names, drug formulations, dosages and number of packages of systemic AM were collected in a stratified sample of hospitals in 27 regions of Russia and extrapolated to the whole market. HC of AM was expressed as number of defined daily doses/1000 inhabitants/day (DID).

### Results

In 2001-2006 HC of AM was 3.286, 2.054, 1.957, 2.194, 2.374 and 2.112, respectively; proportion of HC on the total AM consumption ranged significantly during the study period (27.9, 17.5, 16.9, 19.1, 20.8 and 18.0%, respectively). In 2001-2006, respectively, HC (DID/% on total HC) of tetracyclines was 0.207/6.3, 0.159/7.7, 0.192/9.8, 0.180/8.2, 0.121/5.1, 0.110/5.2, amphenicols – 0.022/0.7, 0.018/0.9, 0.018/0.9, 0.017/0.8, 0.009/0.4, 0.008/0.4, penicillins – 1.684/51.3, 0.728/35.4, 0.556/28.4, 0.643/29.3, 0.658/27.7, 0.454/21.3, cephalosporins and carbapenems – 0.205/6.2, 0.300/14.6, 0.366/18.7, 0.414/18.9, 0.482/20.3, 0.525/24.9, sulfonamides – 0.090/2.7, 0.057/2.8, 0.096/4.9, 0.050/2.3, 0.045/1.9, 0.038/1.8, macrolides and lincosamides – 0.107/3.3, 0.119/5.8, 0.102/5.2, 0.104/4.7, 0.118/5.0, 0.130/6.2, aminoglycosides – 0.697/21.2, 0.442/21.5, 0.369/18.9, 0.391/17.8, 0.482/20.3, 0.339/16.1, quinolones – 0.156/4.7, 0.131/6.4, 0.166/8.5, 0.276/12.6, 0.318/13.4, 0.348/16.5, other AM – 0.118/3.6, 0.100/4.9, 0.092/4.7, 0.119/5.4, 0.141/5.9, 0.160/7.6.

### Conclusions

HC of AM constituted a significant part of the total consumption and was relatively stable over the studied period. Increase in cephalosporins, carbapenems, quinolones use as well as decrease in penicillins, aminoglycosides, amphenicols use was observed.

## BACKGROUND

Hospitals are considered to play the key role in development and spread of antimicrobial resistance [1]. Long-term surveillance of hospital consumption of antimicrobials is essential to improve prescribing practice and prevent excessive expenditures [1].

## OBJECTIVES

To assess main trends of antimicrobials hospital consumption in Russia in 2001-2006.

## METHODS

### Antibiotic consumption data

Data containing generic names, drug formulations, dosages and number of packages of systemic antimicrobials were collected during hospital audit by marketing-research company (RGC). Hospital audit was based on antimicrobials purchases in a stratified sample of hospitals in 27 regions of Russia, data then were extrapolated to the whole market [2].

Hospital consumption of antimicrobials was expressed as number of defined daily doses/1000 inhabitants/day (DID) (WHO, version 2007) [3].

### Population data

Population information was taken from the data of the State Statistic Committee of Russian Federation [4].

## RESULTS

Hospital consumption of antimicrobials and proportion of hospital consumption on the total antimicrobials consumption in 2001-2006 are represented in Figure 1.

Most commonly used group of antimicrobials in 2000-2005 with trend to decrease from 50.9% in 2001 to 21.2% in 2006 was penicillins; leading groups in 2006 were cephalosporins and carbapenems – 24.5% (see Figure 2).

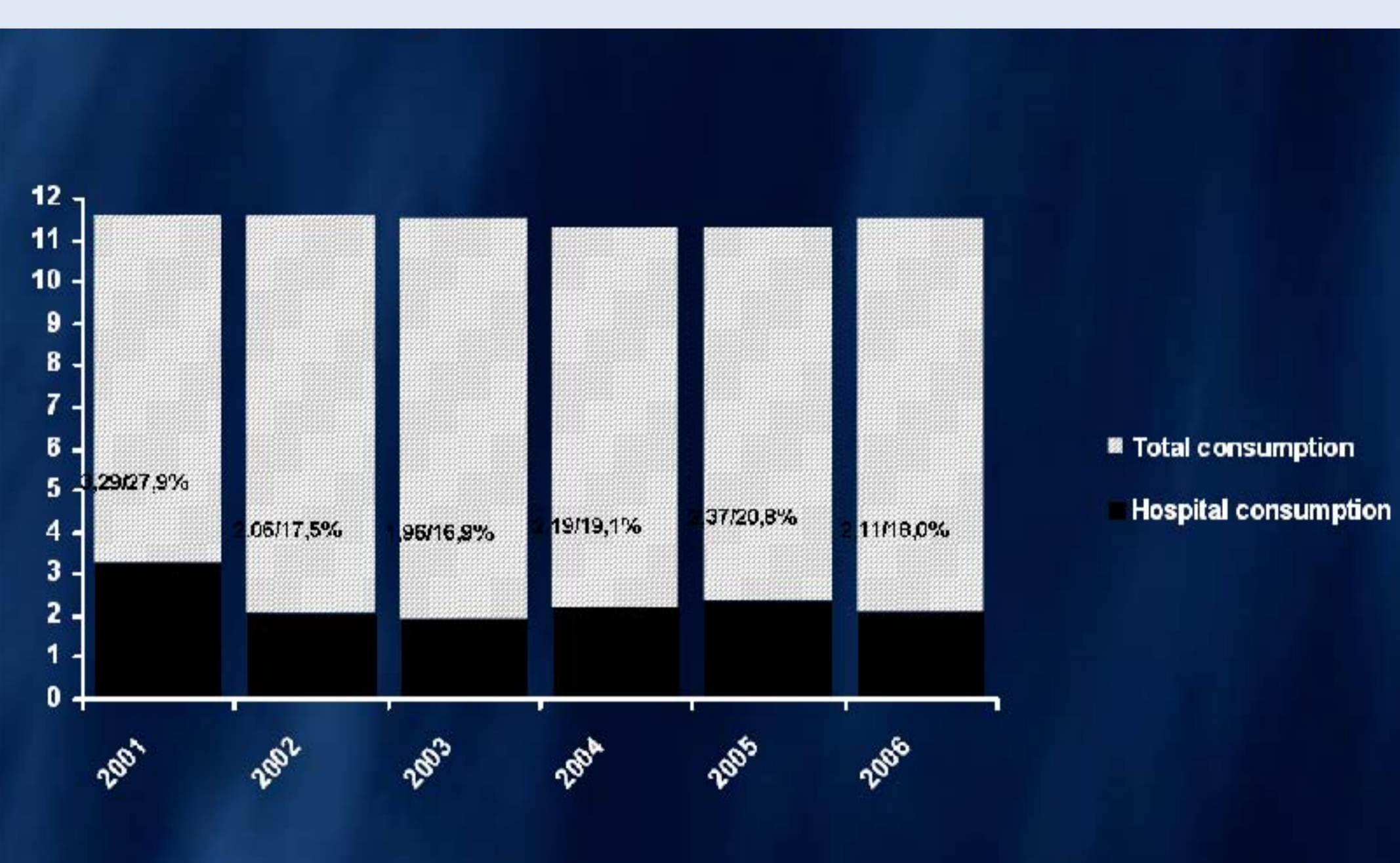


Figure 1. Total antimicrobials consumption with proportion of hospital antimicrobials consumption in Russian Federation in 2001-2006 (DID).

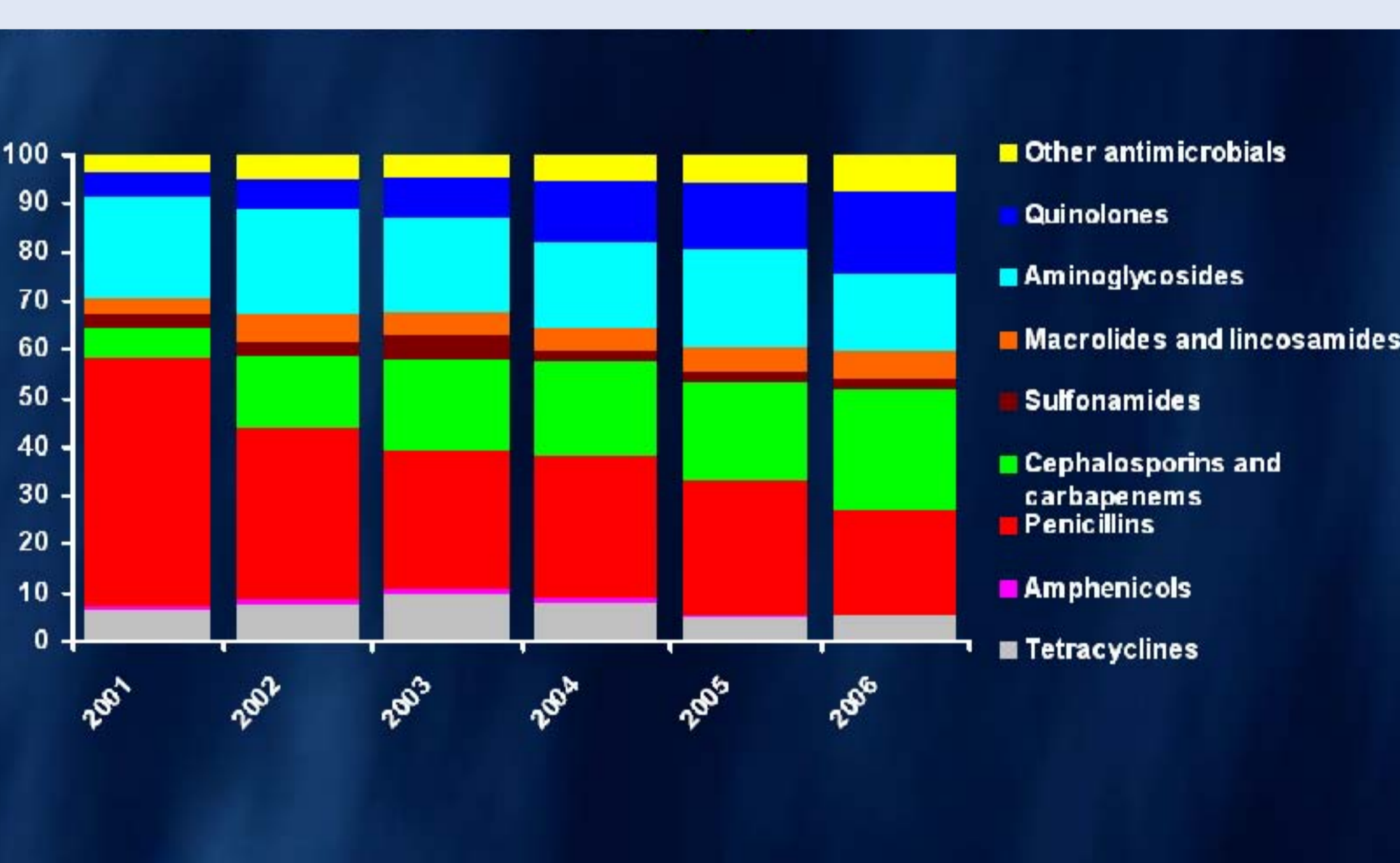


Figure 2. The structure of antimicrobials groups hospital consumption in Russian Federation in 2001-2006 (%).

Within penicillins increase in amoxicillin/clavulanic acid and amoxicillin use (from 0.007 DID and 0.024 DID to 0.05 DID and 0.075 DID, respectively) and decrease in ampicillin use (from 0.99 DID to 0.18DID) were observed.

Cephalosporins and carbapenems use increased from 6.2% in 2001 to 24.5% in 2006, respectively, that was mainly determined by use of 1st generation and 3rd generation cephalosporins (from 0.13 DID and 0.06 DID to 0.27 DID and 0.23 DID, respectively).

Proportion of cephalosporins use is represented in Figure 3.

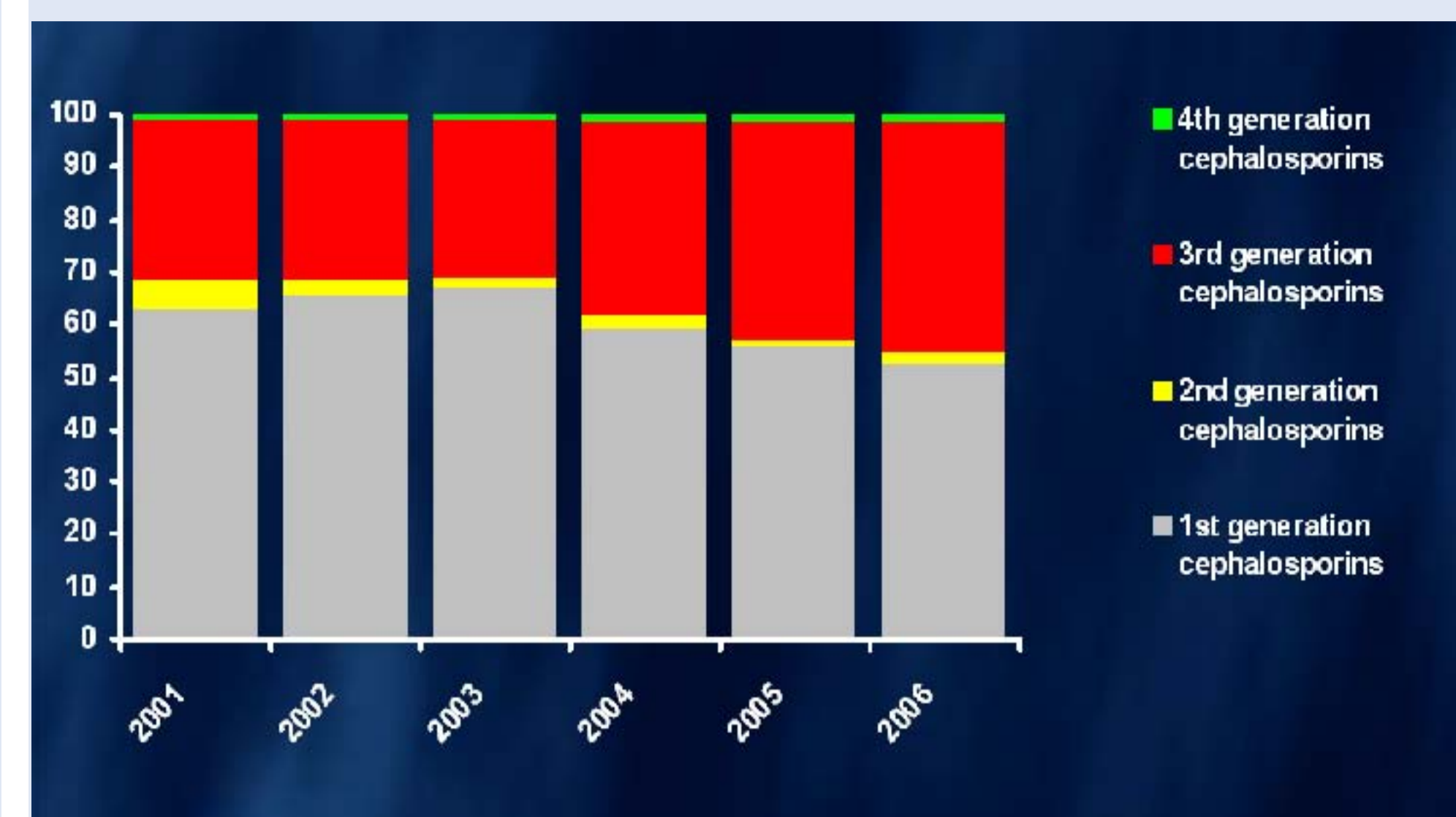


Figure 3. The structure of cephalosporins hospital consumption in Russian Federation in 2001-2006 (%).

Fluoroquinolones use increased from 4.7% in 2001 to 16.3% in 2006, respectively, that was predominantly determined by ciprofloxacin use (from 0.12 DID to 0.21 DID) (see Figure 2).

Macrolides and lincosamides use remained relatively stable in 2001-2006 (in average was 0.11 DID).

Hospital consumption of tetracyclines, amphenicols and sulfonamides decreased from 0.21 DID (6.3%), 0.022 DID (0.7%) and 0.09 DID (2.7%) to 0.11 DID (5.1%), 0.008 DID (0.4%) and 0.04 DID (1.8%), respectively (see Figure 2).

Hospital consumption of aminoglycosides decreased (from 0.70 DID (21.1) to 0.34 DID (15.8%)) with slight lift in 2005 (to 0.48 DID (20.1%)) (see Figure 2).

Hospital consumption of hospital-specific antimicrobials (aminoglycosides, 3rd generation cephalosporins, 4th generation cephalosporins, vancomycin, linezolid, carbapenems) in 2001-2006 was 0.77 DID, 0.54 DID, 0.49 DID, 0.55 DID, 0.69 DID and 0.58 DID, respectively; there was increase in 3rd generation cephalosporins, 4th generation cephalosporins, carbapenems, vancomycin and linezolid weight (from 8.0%, 0.22%, 0.72%, 0.20% and 0.002% to 39.1%, 1.17%, 1.07%, 0.46% and 0.015%, respectively) and decrease in AG weight (from 9

## CONCLUSIONS

1. Hospital consumption of antimicrobials constituted a significant part of the total consumption and was relatively stable over the studied period.

2. Increase in hospital-specific antimicrobials, quinolones use and decrease in tetracyclines, amphenicols, penicillins, sulfonamides and aminoglycosides use were revealed.

## REFERENCES

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